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Underwater Robots Work Together Without Human Input

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A trawl-resistant bottom mount (TRBM) splashes about at the end of a crane as it's lowered into choppy waters off the coast of Santa Cruz, Calif., on July 31, 2006. Technicians on the Research Vessel Point Sur deployed two of the turtle-shaped pods and associated communications platforms as part of a major oceanographic field experiment being conducted during the month of August. Research scientists from nearly a dozen major institutions joined the Naval Postgraduate School (NPS) in launching a networked fleet of autonomous vehicles into the depths of the Monterey Bay. NPS' Prof. Steve Ramp and Princeton University's Naomi Ehrich Leonard are the principal investigators for the Adaptive Sampling and Prediction (ASAP) program, one of four marine research initiatives taking place under the Monterey Bay 2006 (MB06) umbrella. The TRBM encloses an acoustic Doppler current profiler and data modem, which transmits real-time current profiles from the sea floor to the laboratory via the Seaweb information network, designed and deployed by NPS Prof. Joe Rice. The data, along with other real-time data from gliders, AUVs, coastal HF radars and aircraft, is assimilated into numerical models for daily forecasts of ocean conditions. The forecasts are then used to optimize the positions of the various sampling systems. This process, called "adaptive sampling," is expected to dramatically improve our knowledge of the ocean and our ability to predict its chaotic behavior. The Monterey Bay Aquarium Research Institute (MBARI) in Moss Landing, Calif., will host a media day on Aug. 23, 2006 featuring scientists showcasing the results of these projects.